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New England Bluet Damselfly

Enallagma laterale

State Status: **Special Concern**
Federal Status: None

DESCRIPTION OF ADULT: The New England Bluet is a small, semiaquatic insect of the order Odonata, suborder Zygoptera (the damselflies), and family Coenagrionidae (pond damsels). Like most damselflies, New England Bluets have large eyes on the sides of the head, short antennae, and four heavily veined wings that are held folded together over the back. The male's thorax (winged and legged section behind the head) is mostly blue with black stripes on the "shoulders" and top. The New England Bluet has a long, slender abdomen composed of ten segments. The abdominal segments are blue with black markings on segments 1 through 7. Segments 6 and 7 are almost entirely black on top. Segments 8 and 9 are entirely blue, except segment 8 has a horizontal black dash on each side of the segment. This mark is always present but varies greatly in size. The top of segment 10 is black. Females have thicker abdomens than the males, and are generally brown where the males are blue, though older females may become quite blueish.

New England Bluets average just over one inch (25 mm to 28 mm) in length.

SIMILAR SPECIES The bluets (genus *Enallagma*) comprise a large group of damselflies, with no fewer than 20 species in Massachusetts. Identification of the various species can be very difficult and often requires close examination of the terminal appendages on the males (Nikula *et al.* 2003) or the mesostigmal plates (located behind the head) on the females (Westfall & May 1996). The New England Bluet is most similar in appearance to the Pine Barrens Bluet (*E. recurvatum*), a Threatened species in Massachusetts. Both species are found in coastal plain ponds and do occur together. The two species are most safely distinguished by the shape of the terminal appendages on the male and the mesostigmal plates of the females. The black dash on the sides of segment 8 is generally larger in the New England Bluet; however this feature is highly variable and should not be used for definitive identification.

HABITAT: New England Bluets have been found in a variety of lentic habitats, including swampy open water in north-central Massachusetts, though they are most common at coastal plain ponds.

The nymphs are aquatic and live among aquatic vegetation and debris. The adults inhabit emergent vegetation in wetlands and also fields and forest near wetlands.

LIFE-HISTORY/BEHAVIOR: The flight season of the New England Bluet is somewhat longer than that of the closely related Pine Barrens Bluet, although the majority of records are also restricted to the month of June. Emergence generally occurs during the last week of May and adults can be seen into early July. Although little has been published specifically on the life history of the New England Bluet, it is likely similar to other, better-studied species in the genus. All odonates have three life stages: egg, aquatic nymph, and flying adult. The nymphs are slender with three leaf-like appendages extending from the end of the body which serve as breathing gills. They have a large, hinged lower jaw which they are able to extend forward with lightning speed. This feature is used to catch prey, the nymph typically lying in wait until potential prey passes within striking range. They feed on a wide variety of aquatic life, including insects and worms. They spend most of their time clinging to submerged vegetation or other objects, moving infrequently. They transport themselves primarily by walking, but are also capable of swimming with a sinuous, snake-like motion.

NEW ENGLAND BLUET FLIGHT PERIOD

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

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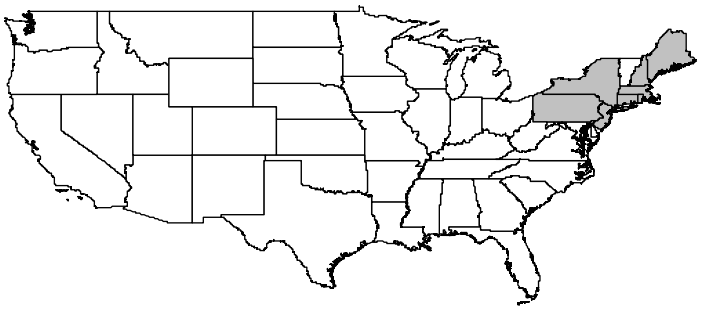
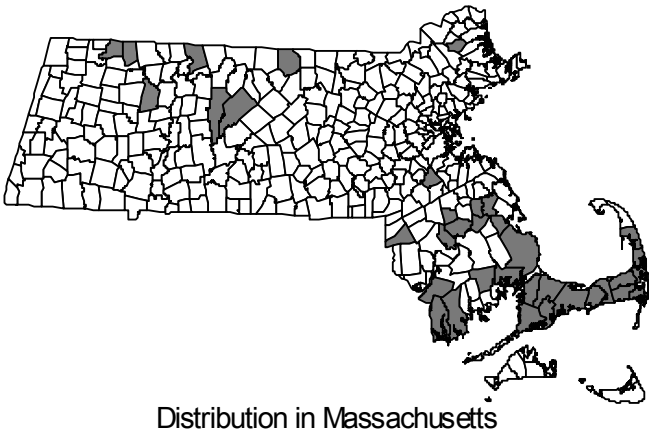
New England Bluets have a one-year life cycle. The eggs are laid in the early summer and probably hatch in the fall. The nymphs develop over the winter and spring, undergoing several molts. In early to mid-summer the nymphs crawl out of the water up onto emergent vegetation and transform into adults. This process, known as emergence, typically takes a couple of hours, after which the newly emerged adults (tenerals) fly weakly off to upland areas where they spend a week or two feeding and maturing. The young adults are very susceptible to predators, particularly birds, ants, and spiders; mortality is high during this stage of the life cycle. The adults feed on a wide variety of smaller insects which they typically catch in flight.

When mature, the males return to the wetlands where they spend most of their time searching for females. When they locate a female, the male attempts to grasp her behind the head with the terminal appendages at the end of his abdomen. If the female is receptive, she allows the male to grasp her, then curls the end of her abdomen up to the base of the male's abdomen where his secondary sexual organs ("hamules") are located. This coupling results in the heart-shaped tandem formation characteristic of all odonates. This coupling lasts for a few minutes to an hour or more. The pair generally remains stationary during this mating but, amazingly, can fly, albeit weakly, while coupled.

Once mating is complete, the female begins laying eggs (oviposits) in emergent grasses and rushes, using the ovipositor located on the underside of her abdomen to slice into the vegetation where the eggs are deposited. Although the female occasionally oviposits alone, in most cases the male remains attached to the back of the female's head. This form of mate-guarding is thought to prevent other males from mating with the female before she completes egg-laying. The adult's activities are almost exclusively limited to feeding and reproduction, and their life is short, probably averaging only three to four weeks for damselflies like the New England Bluet.



Range of Species in US



Distribution in Massachusetts
1977 - 2002
Based on records in Natural Heritage Database

RANGE: The New England Bluet is a regional endemic and has a range restricted to scattered locations in the northeastern United States, from southwestern Maine to New Jersey and Pennsylvania. In New England they have been found in every state except Vermont, but are most common from eastern Massachusetts southwestward to Connecticut.

POPULATION STATUS IN MASSACHUSETTS: The New England Bluet is listed as a Species of Special Concern in Massachusetts. It is found throughout eastern portions of the state, with a few records west of the Connecticut River (perhaps reflecting limited field work in that area).

MANAGEMENT RECOMMENDATIONS: The major threat to the New England Bluet at this time is most likely the destruction of its breeding habitat. Threats to their habitat include construction and development, artificial drawdown by pumping stations, and run-off from roadways and sewage. In addition, high-impact recreational use such as Off Road Vehicles driving through pond shores, which may destroy breeding and nymphal habitat, and motor boats, whose wakes swamp delicate emerging adults, are threats. Because New England Bluets, like many species of damselflies, spend a period of several days or more away from the water maturing, it is important to maintain natural upland habitats near the ponds.

REFERENCES:

Nikula, B., J.L. Loose, and M.R. Burne. 2003. A Field Guide to the Dragonflies and Damselflies of Massachusetts. Massachusetts Natural Heritage and Endangered Species Program.

Walker, E.M. 1953. The Odonata of Canada and Alaska, Vol. 1, The Damselflies.

Westfall, M.J., Jr., and M. May. 1996. Damselflies of North America. Scientific Publishers.

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